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ABSTRACT

This study examined the role of motivational factors on the academic achievement of children in the 3rd, 4th, and 5th grades. Four motivational factors were assessed: the child's motivational attributions, motivational goal orientation, self-perception, and mastery-oriented behaviors in the classroom. Mastery-oriented behaviors include being goal-oriented, being able to work independently, seeking out challenging tasks, and participating as an active agent in the learning process. Results of parent, teacher, and child measures indicated that intrinsically goal-oriented children tended to have high academic self-concepts, exhibited high levels of mastery behaviors in the classroom, and scored well on school achievement tests. Achievement levels were found to be a joint result of ability and motivation, and mastery behaviors in the classroom were the link between intrinsic goal orientation and achievement, and between self-concept in the classroom and achievement. The behavioral measure of children's mastery was the most important indicator of achievement. When judgments of the children's abilities were taken from classroom teachers and from parents, it was found that teachers views were more highly associated with achievement levels. Recommendations for teachers based on the study results include allowing students to have choices between equally challenging tasks, and minimizing external rewards as motivators for achievement. (JPB)

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MOTIVATION AND ACHIEVEMENT IN ELEMENTARY CHILDREN

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The Purpose of Our Research

Our primary purpose in conducting this project was to better understand the factors that contribute to children's high and low scholastic achievement during the later elementary years. We were particularly interested in examining the role of motivational factors. Although teachers frequently report that motivation plays a key role in children's school performance, there has been surprisingly little research in the fields of education or psychology to document these impressions directly among elementary-age children. However, several recent cross-cultural studies carried out by researchers at the University of Michigan (see Stevenson & Lee, 1990) suggest that motivation may be a key factor in underachievement levels among many U.S. children. These studies point out that Asian children consistently outperform U.S. children in math and science despite having IQs that are similar to those of the U.S. children. In the present study, the connection between motivation and achievement was examined directly among 102 third-, fourth- and fifth-grade children in the Winston-Salem/Forsyth County School System.

Motivation to learn is increasingly understood to be a complex concept with numerous dimensions. Few studies, however, have included more than one or two different motivational measures when examining motivation and achievement. Relationships between these different dimensions and between motivational measures and academic achievement have been hypothesized but seldom tested concurrently, particularly among older elementary-age children.

In the present study, four different motivational qualities (dimensions) were assessed to better understand children's achievement. One aspect dealt with the nature of the child's cognitive understanding of what determines school success and failure. We refer to this as the child's motivational attributions. That is, does the child attribute success and failure primarily to effort, ability, or luck? All other things being equal, *effort* attributions are likely to result in greater investments of work that result in higher achievement. A second important motivational quality assessed was the child's motivational goal orientation, that is, the tendency to be intrinsically or extrinsically motivated. Children who are intrinsically motivated typically engage in achievement behavior for the sheer pleasure and interest in learning and mastery. Extrinsically motivated children are motivated by their interests to please the teacher or some other external source and are dependent on guidance from outside sources. Extrinsic motives – preferring easy tasks over difficult ones, working primarily to please or to get good grades rather than to satisfy one's curiosity, and relying heavily on the teacher for direction – are believed to have negative consequences for achievement. Thirdly, the child's self-perception in the academic domain was assessed. The theory of self-efficacy (see Bandura, 1977) proposes that a person must believe that he or she is sufficiently competent in order to execute the instrumental actions that lead to achievement.

These three cognitive aspects of motivation are believed to affect academic achievement through mastery-oriented behaviors in the classroom – the fourth motivational dimension measured here. Mastery-oriented behaviors include being goal-oriented, able to work independently, seeking out challenging tasks, and participating as an active agent in the learning process. Although research on mastery motivation has been carried out primarily with very young children, and even infants, some have argued that mastery-oriented children will be better

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adjusted and higher achieving in school. There is, however, very little research evidence to document this.

In the present study, a perfect relationship between the four measures of motivation and school performance was not expected. Some students perform well in school with little apparent effort, while some perform poorly despite a great deal of effort. Therefore, measures of innate/basic ability were also factored into the present study's predictor model to account for more of the variability in achievement. This factor is often omitted in motivation and achievement studies. To summarize the above, the primary purpose of the present investigation was to determine whether motivation contributes to children's academic achievement over and beyond what is due to ability alone.

A second major purpose of the project was to determine the similarity with which parents, teachers, and the children themselves judge the child's academic ability and motivational tendencies and cognitions. Judgements of the children's abilities and motivation were taken from the classroom teachers, the parents (if willing to participate), and the children themselves. There are two primary reasons for studying this question. On the one hand, it is important for researchers and schools alike to know how informed parents and children are about the child's achievement-related characteristics relative to the teacher's knowledge. Without accurate knowledge of these prerequisites for achievement, parents are not able to design the types of environments needed to support the child's achievement success. Also, if the child is unclear about his/her own ability and motivational suitability for high achievement, he/she is not in a good position to take advantage of potentially important learning experiences. Very few studies have examined children's self-assessments of their abilities and motivational cognitions and the relationship they hold to academic performance. Because the instruments used in this project for adults and children are parallel, direct comparison can be conducted, i.e., within-family analyses. The second reason for our interest in this consistency issue is a diagnostic one. The question as to whose (i.e., teachers' or parents') assessments of the child's characteristics should enter into diagnostic appraisals is an interesting and potentially important one.

METHOD

Participants:

Families were recruited from the 3rd, 4th and 5th grade classes at Sedge Garden Elementary School in the Forsyth County Public School System. Approval from the Principal, Mrs. Faye Chavious, from Dr. Johnson, Assistant Superintendent for Winston-Salem-Forsyth County Schools, and from the Institutional Review Board of UNC-G was obtained. The target school's overall ethnic ratio is approximately 70% White and 30% African-American students. Income levels range from low-income (subsidized) to upper-middle income, with students predominantly from middle-income homes.

All 3rd, 4th, and 5th grade children and their parents were invited to participate and given parental consent forms. One hundred and two families agreed to participate. The participating sample is described below:

Mean ages:

Children – 10.8 years; range 8.5 – 11.7 years
Fathers – 38.8 years; range 28 – 51 years
Mothers – 36.5 years; range 25 – 49 years

Mean Education Level

Mothers – 13.8 years; range 11 – 18 years
Fathers – 13.6 years; range 10 – 18 years

Family Factors:

Mean Years of Marriage: 14.2
Mean Number of Siblings: 1.2; range 0 – 5
Children:

57% - Male
43% - Female
55% - First-borns
75% - No known medical condition
24% - Medical condition (includes LD)
86% - Caucasian
13% - African-American
1% - Hispanic
43 3rd-graders; 28 4th-graders; 31 5th-graders

Parents:

65% - married
3% - single
21% - divorced/separated
10% - remarried

Mothers:

97% - biological mothers
1.5% - step-mothers
1.5% - grandmother
80% - mothers employed outside the home

Fathers:

66% - biological fathers
13% - step-fathers
18% - no father in home
100% - fathers employed outside the home

PROCEDURES AND INSTRUMENTS: Instruments are available upon request)

Parent Measures

Procedure. A packet containing the five instruments and the family questionnaire were sent to each participating home. Mothers and fathers were asked to complete all instruments separately, i.e., in separate rooms, without conferring with each other or the child. Self-addressed stamped envelopes to the researchers were provided for the return of the completed forms. Phone calls were made after two weeks to follow-up on unreturned forms. A five-dollar gift certificate from a local toystore was mailed to the home address upon receipt of the forms and completion of the child session.

Instruments:

1. The Instrumental Competence Scale for Children (COMPSCALE – Short Form). The COMPSCALE is an adult rating scale developed by Lange and MacKinnon (1987) to assess

children's mastery oriented behaviors. Mothers and fathers were asked to complete a modified version (Short Form) containing 18 descriptive items considered to be most centrally related to the total score for the scale. Statements refer to the child's general inclinations to be spontaneously active, to be independent, to be self-directed, persistent, and observant of their environment. Each item is stated as a brief description of a behavior (e.g., "is competitive"; "has difficulty completing tasks and activities"). The adults were asked to state whether they strongly disagree, disagree, agree, or strongly agree that the statement describes the target child relative to other children of the same age. Each answer corresponds with one number (1-4) resulting in 4-point Likert type scale. A score sheet reverses the numbers of the negatively worded descriptors. This scoring system allows for the instrument to reflect a continuous variable; a high rating score indicates high mastery orientation; a low rating score indicates low mastery orientation.

2. Parent's Rating Scale of Child's Intrinsic vs. Extrinsic Classroom Orientation (SIECO). This is a 10-item instrument developed by Harter (1980) designed to parallel the self-report measure completed by the child. The questions pertain to the child's intrinsic or extrinsic goal orientation. Each answer on the questionnaire corresponds with one number 1-4, resulting in a continuous variable; a high score indicates high intrinsic motivation, a low score indicates high extrinsic motivation.

3. Perceptions Inventory (PI). This instrument was designed for this study to directly parallel (item-by-item) the Harter Self-Perception Profile for Children. Some questions assess the adult's direct perception of the child (e.g., "easily remembers things he/she learned"). Other questions assess the adult's meta-perspective of the child's perception (e.g., child doubts his intellectual ability"). The 36-item instrument focuses on perceptions in five domains: academic, physical appearance, sociability, athletic ability, and global self-worth. The adult was asked to state whether they strongly disagree, disagree, agree, or strongly agree that the statement describes the target child relative to other children of the same age. Each answer corresponds with one number (1-4) resulting in 4-point Likert type scale.

4. General Abilities (GA). This brief (6 item) questionnaire focused on assessment of the child's comparable general abilities (e.g., relative to other children the same age, this child's verbal skills are poor (1), below average (2), average (3), above average (4), or far superior (5)). These items were taken from the Stevenson cross-national studies (reported in Stevenson & Lee, 1990).

5. Academic Achievement and Failure Attributions (AAFA). This measure of motivational attributions was also taken from Stevenson and colleagues' cross-national study of academic achievement (Stevenson & Lee, 1990). Statements that refer to ability, effort, and luck as explanations of academic achievement and failure are presented. Parents were asked whether they strongly agree, agree, slightly agree, slightly disagree, disagree, or strongly disagree with each statement. Separate scores were determined for ability, effort and luck attributions.

Family Life Questionnaire. This instrument provided general demographic information on the target child and his or her family.

Teacher Measures

Procedure. Teachers of participating students were asked to complete a COMPSCALE, the Intrinsic/Extrinsic Scale (SIECO), an abbreviated Perceptions Inventory (academic domain only), the General Abilities questionnaire, and an Attributions (AAFA) questionnaire. Two five-dollar gift certificates to a local toy store were given to the teachers as compensation.

Child Measures

Procedure. All child sessions were conducted in the school setting. For purposes of test-retest reliability, twenty-five of the children participated in two identical sessions. High correlations were found between the measures taken from the two sessions, therefore measures taken at the

first session were used in all analyses.

If the child was agreeable, the child was escorted from the classroom by the researcher to a workroom. The child was offered a choice of two chairs positioned perpendicular to each other at a table. The child was thanked for his participation and told that "our time together will be about 30 minutes". The researcher explained her job at the University and her interest in how children think about things and about themselves. The researcher then explained that she had 5 sets of questions she would be asking. She told the child, "This is a survey, not a test, so there are no right or wrong answers. The way you will answer the questions will be the same for the first three sets of questions. First, I will describe two groups of kids, then you will tell me which group you are most like. After that, I will ask you if that is sort of true for you or really true for you." The researcher then asked if the child had any questions and then proceeded with the 3 instruments. The Harter Self-Perception Profile for Children, the Scale of Intrinsic vs. Extrinsic Orientation, and the Child Self-Assessment Competence Scale were administered in rotating order. Next, the researcher asked the child to complete the statements on the General Abilities questionnaire by circling one of the choices (from very low to far superior). The researcher read aloud each statement. Next, the researcher told the child that she was going to read a statement and then ask the child whether he or she strongly agrees, agrees, slightly agrees, slightly disagrees, disagrees, or strongly disagrees with the statement. Upon completion of the AAFA, the child was thanked for his or her participation and attention and was walked back to the classroom by the researcher.

Instruments.

1. Child Self-Assessment Competence Scale. The CSA-COMPSCALE was designed for this study. Each item on the 18-item scale directly parallels an item on the adult COMPSCALE. This will allow for an item-by-item comparison with adult ratings along with more general comparisons between perspectives.

A two-step method of choice, based on the Harter scales, will be used. The child is first presented with two categories of children. For example, " Some kids let others know what they want and what they think, but other kids like to go along with what others think and do". The child first decides which kids he or she is most like. The child is further questioned (for degree of choice) once the first choice has been made: "Is this sort of true for you" or "really true for you?". The result is a 4-point Likert-type ordinal scale with low scores indicating low instrumental behavior ratings. In the scale, however, items are worded in both positive and negative directions.

2. Self-Perception Profile for Children (to parallel the PI). The 36-item scale was developed by Harter (1985) to be used with children 7 years to adolescence. Self-perceptions of the child are assessed in 5 domains: academic, physical appearance, sociability, athletic ability, and global self-worth. The items will be read aloud to the student in the same manner as the CSA-COMPSCALE. The format is the same and the result will be a 4-point Likert type ordinal scale.

3. Scale of Intrinsic vs. Extrinsic Orientation in the Classroom (SIECO). This is a self-report measure that was developed by Harter (1980) to assess a child's motivational goal orientation. The two level questioning on each item used on the CSA-COMPSCALE and the Harter Self-Perception Profile for Children is the structure of this instrument as well. The questions pertain to a child's tendency toward intrinsic motivation -- preferring challenges, hard work, being curious and interested for learning's sake-- vs. a tendency toward extrinsic motivation. This is described as a preference for easy work that is assigned, a preference for directed work, and a desire to perform schoolwork to satisfy the teacher and to obtain good grades.

4. Academic Achievement and Failure Attributions (AAFA). This instrument directly parallels the adult instrument. Statements are read to the child (e.g., "If a person your age doesn't do well

in math, there is probably nothing that person can do about it.") The child will be asked if he/she strongly agrees, agrees, disagrees, or strongly disagrees.

5. General Abilities (GA). The six questions focus on perceived comparable ability. They directly parallel the questions on the adult instrument. The same rank measure of very low, below average, average, above average, and far superior will be used.

Child Outcome Measures.

Classroom grades. Child class performance was taken from records of quarterly grades for the year. Grades were coded on a 5-point scale ranging from E (1) to A (7) and were summed and averaged for the previous 4 quarters.

Achievement scores. Scores from the current year's End of Grade Test for the current grade year in Reading and Math were used.

Cognitive Abilities Scores. Scores from group I.Q. tests given at the end of second grade were used as an alternate ability measure. These were available for 85 children.

PRIMARY RESULTS

1. The children in this study were above average in achievement; however, their average IQ score was just slightly above the standardized mean of 100 (see Table 1).

Table 1.
Gender and Grade Level Averages

	Boys	Girls	3rd-grade	4th-grade	5th-grade
GPA	3.83	4.19	3.94	3.66	3.56
EOG Reading	151.38	153.73	146.75	153.49	151.05
EOG Reading percentile	64.48%	71.16%	61.27%	69.18%	47.65%
EOG Math	153.19	154.39	143.94	151.94	158.05
EOG Math Percentile	69.48%	73.36%	58.33%	66.71%	66.68%
I.Q.	105	109	107	107	106

2. Motivational dimensions that have been shown to be individually related to children's academic achievement proved to be highly associated with each other. That is, intrinsically goal-oriented children tended to have high academic self-concepts, exhibited high levels of mastery behaviors in the classroom, and scored well on school achievement tests.

3. Motivational measures account for a portion of the variability in achievement that ability measures cannot account for alone. That is, children's achievement levels are the joint result of ability and motivation.

4. Teachers rated girls significantly higher on measures of intrinsic goal orientation, mastery-oriented behaviors and general academic abilities; however girls' end-of grade achievement levels and classroom grade point averages were not significantly higher than boys'.

5. The measure of effort attributions in this study was not highly associated with mastery-oriented behaviors as was expected. We believe that this is due to the wording of the

questionnaire used. A general explanation was asked for to explain failure and success in children, rather than explanations for the child's personal successes or failures. This resulted frequently (both for the adult raters and the children) in equal levels of agreement and/or disagreement with ability and effort explanations with the rationale that some statements could be true for some children and some statements could be true for other children.

6. This study has shown that mastery behaviors in the classroom is the link between intrinsic goal orientation and achievement and between self-concept in the classroom and achievement.

7. Intrinsic goal orientation, academic self-perception, and mastery-oriented behaviors appear to be the three most important dimensions of motivation to achieve. Each provides some unique information when predicting school performance.

8. Of all the motivational measures, however, the behavioral measure of children's mastery -- what a child does in the classroom -- is the most important indicator of achievement.

9. Among the adult raters of the children, the teachers' views were found to be the most highly associated with achievement levels overall (see Table 2).

Table 2.

Note: The higher the number, the greater the association between the rating and the achievement outcome. A perfect relationship is 1.0; 0.0 indicates no relationship.

Correlations with Outcomes by Raters

Child Self-ratings	GPA	EOG Reading	EOG Math
Child – Mastery Behs.	.31**	.22*	.18
Child – Gen. Abilities	.51**	.32**	.32**
Child– Intrinsic Orientation	.31**	.36**	.39**
Child-perceptions in aca. domain	.53**	.42**	.49**

Mother Ratings	GPA	EOG Reading	EOG Math
Mother – Mastery Behs.	.60**	.34**	.27*
Mother – Gen. Abilities	.71**	.70**	.56**
Mother– Intrinsic Orientation	.66**	.53**	.34**
Mother-perceptions in aca. domain	.73**	.55**	.45**

Father Ratings	GPA	EOG Reading	EOG Math
Father – Mastery Behs.	.54**	.34*	.21
Father – Gen. Abilities	.64**	.71**	.54**
Father– Intrinsic Orientation	.54**	.56**	.38*
Father-perceptions in aca. domain			

Teacher Ratings	GPA	EOG Reading	EOG Math
Teacher – Mastery Behs.	.75**	.61**	.63**
Teacher – Gen. Abilities	.78**	.65**	.72**
Teacher– Intrinsic Orientation	.76**	.61**	.64**
Teacher -perceptions in aca. domain			

10. Fathers' ratings were very similar to mothers' ratings. This is support for the research that has shown that as children move toward adolescence their fathers become more involved; i.e., the fathers' knowledge of and interest in the child increases. This appears to be true for this pre-adolescent age group as well. There appears to be a high level of consensus between parents on their assessments of their children's abilities and motivation. (See Table 3).

11. The parents' assessments of their child were highly associated with each other, but not as highly associated with the teachers' ratings of the child.

12. The children's self-assessments were most highly associated with the teachers' assessments. The second highest associations were between the children and their fathers' assessments.

Table 3.
Note: The higher the correlation, the greater the similarity of assessments of the child.

Perspective Comparisons

Mother/Father Comparisons	Father – Mastery Behs	Father – Gen. Abilities	Father – Intrinsic Orientation	Father – child-perceptions in aca. domain
Mother – Mastery Behs.	.65**			
Mother – Gen. Abilities		.76**		
Mother – Intrinsic Orientation			.63**	
Mother – child-perceptions in aca. domain				.80**

Mother/Child Comparisons	Child – Mastery Behs.	Child – General Abilities	Child – Intrinsic Orientation	Child – Self-perceptions in aca. domain
Mother – Mastery Behs.	.19			
Mother – Gen. Abilities		.49**		
Mother – Intrinsic Orientation			.12	
Mother – child-perceptions in aca. domain				.31*

Father/Child Comparisons	Child – Mastery Behs.	Child – General Abilities	Child – Intrinsic Orientation	Child – Self-perceptions in aca. domain
Father – Mastery Behs.	.16			
Father – Gen. Abilities		.42**		
Father – Intrinsic Orientation			.41**	
Father – child-perceptions in aca. domain				.39**

Teacher/Child Comparisons	Child – Mastery Behs.	Child – General Abilities	Child – Intrinsic Orientation	Child – Self-perceptions in aca. domain
Teacher – Mastery Behs.	.18			
Teacher – Gen. Abilities		.41**		
Teacher – Intrinsic Orientation			.32*	
Teacher – child-perceptions in aca. domain				.51**

Mother/Teacher Comparisons	Teacher – Mastery Behs.	Teacher – Gen. Abilities	Teacher – Intrinsic Orientation	Teacher – child-perceptions in aca. domain
Mother– Mastery Behs.	.51**			
Mother – Gen. Abilities		.66**		
Mother – Intrinsic Orientation			.48**	
Mother – child-perceptions in aca. domain				.63**

Father/Teacher Comparisons	Father – Mastery Behs.	Father – Gen. Abilities	Father – Intrinsic Orientation	Father – child-perceptions in aca. domain
Teacher – Mastery Behs.	.45**			
Teacher – Gen. Abilities		.48**		
Teacher – Intrinsic Orientation			.35*	
Teacher – child-perceptions in aca. domain				.65**

13. An analysis of the mastery-oriented behaviors measure shows that three dimensions exist: (1) cognitive curiosity, (2) planful and self-regulatory task approach, and (3) extroversion.

Recommendations for Teachers

- Allow choices between equally challenging tasks. Tasks that are too easy promote a false sense of competency and may undermine effortful, mastery-oriented behaviors in the classroom.
- Promote and encourage mastery-oriented behaviors. Classroom structure and teaching style should allow for exploratory, creative, independent behaviors in the classroom. Allow for child planning, participation, and self-regulation in the learning process.
- Minimize external rewards as motivators for achievement.
- Teach and encourage effort attributions/explanations for failure. This emphasizes the temporariness of failure and suggests greater effort for improvement of performance.
- Promote the importance of parent/teacher communication, keeping parents informed of child behaviors and abilities in the classroom. Implications are that parental knowledge may play a significant role in children's achievement.